

LISTING OF THE CLAIMS

This listing of the claims replaces all prior versions and listings of the claims in the *Subject Application*:

1. *(Previously Presented)* A method for making a ferritic stainless steel article having an oxidation resistant surface, the method comprising:
providing a ferritic stainless steel comprising 0.2 to 1.0 weight percent aluminum, at least one rare earth metal and 16 to less than 30 weight percent chromium, wherein the total weight of rare earth metals is from 0.02 to 1.0 weight percent; and
electropolishing at least one exposed surface of the ferritic stainless steel, so that, when subjected to an oxidizing atmosphere at high temperature, the exposed electropolished surface develops an electrically conductive, aluminum-rich, oxidation resistant oxide scale comprising chromium and iron and having a hematite structure differing from Fe_2O_3 , $\alpha\text{-Cr}_2\text{O}_3$, and $\alpha\text{-Al}_2\text{O}_3$.
2. *(Previously Presented)* The method of claim 1, wherein lattice parameters a_0 and c_0 of the oxide scale differ from a_0 and c_0 of Fe_2O_3 , $\alpha\text{-Cr}_2\text{O}_3$, and $\alpha\text{-Al}_2\text{O}_3$.
3. *(Previously Presented)* The method of claim 1, wherein the at least one exposed electropolished surface develops the oxide scale when heated in an oxidizing atmosphere at a temperature in the range of 750°C to 850°C.
4. *(Previously Presented)* The method of claim 1, wherein the at least one exposed electropolished surface develops the oxide scale when heated in an oxidizing atmosphere for at least 100 hours at a temperature in the range of 750°C to 850°C.

5. (*Original*) The method of claim 1, wherein the oxide scale is characterized by lattice parameters a_o in the range of 4.95 to 5.04 Å and c_o in the range of 13.58 to 13.75 Å.

6. (*Withdrawn*) The method of claim 1, wherein the oxide scale is characterized by nominal lattice parameters $a_o = 4.98$ Å and $c_o = 13.57$ Å.

7. (*Canceled*)

8. (*Canceled*)

9. (*Previously Presented*) The method of claim 1, wherein the exposed electropolished surface develops the oxide scale when heated in an oxidizing atmosphere for at least 100 hours at a temperature in the range of 750°C to 850°C, and wherein the oxide scale is characterized by a_o in the range of 4.95 to 5.04 Å and c_o in the range of 13.58 to 13.75 Å.

10. (*Previously Presented*) A method for making a ferritic stainless steel article having at least one oxidation resistant surface, the method comprising:
providing a ferritic stainless steel comprising 0.2 to 1.0 weight percent aluminum, at least one rare earth metal and 16 to less than 30 weight percent chromium, wherein the total weight of rare earth metals is from 0.02 to 1.0 weight percent; and
electropolishing at least one exposed surface of the ferritic stainless steel,
so that the exposed electropolished surface develops an aluminum-rich oxide scale when heated in an oxidizing atmosphere for at least 100 hours at a temperature in the range of 750°C to 850°C, the oxide scale comprising iron and chromium and having a hematite structure, a_o in the range of 4.95 to 5.04 Å, and c_o in the range of 13.58 to 13.75 Å.

11-98. (Canceled)

99. (Previously Presented) A method for making a ferritic stainless steel article having at least one oxidation resistant surface, the method comprising:
electropolishing at least one exposed surface of a ferritic stainless steel comprising 0.4 to 0.8 weight percent aluminum, 18 to 22 weight percent chromium, and 0.02 to 0.2 weight percent rare earth metals, wherein the rare earth metals are selected from the group consisting of cerium, lanthanum, praseodymium, and combinations of any thereof;

wherein the electropolishing chemically modifies the at least one exposed surface of the ferritic stainless steel so that the electropolished exposed surface develops an aluminum-rich oxide scale when heated in an oxidizing atmosphere at a temperature in the range of 750°C to 850°C, aluminum-rich the oxide scale comprising iron and chromium and having a hematite structure, a_0 in the range of 4.95 to 5.04 Å, and c_0 in the range of 13.58 to 13.75 Å.

100. (Previously Presented) The method of claim 99, further comprising heating the ferritic stainless steel article in an oxidizing atmosphere at a temperature in the range of 750°C to 850°C, wherein the exposed electropolished surface develops an aluminum-rich oxide scale comprising iron and chromium and having a hematite structure, a_0 in the range of 4.95 to 5.04 Å, and c_0 in the range of 13.58 to 13.75 Å.

101. (Previously Presented) The method of claim 99, wherein the electropolishing decreases the rate of oxidation of the ferritic stainless steel by at least one order of magnitude when compared to a non-electropolished sample of the same ferritic stainless steel, when heated in an oxidizing atmosphere at a temperature in the range of 750°C to 850°C.